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ABSTRACT

A statewide random sampling of seven groups of professional educators (N=90) and 30 parents of learning disabled (LD) students were compared for their degree of agreement on the Modified Component Disability Instrument. Professionals included teachers of LD adolescents, remedial reading teachers, school psychologists, speech clinicians, school principals, and school counselors. The Bartlett Test of homogeneity of variance was applied to each of the 20 components of disabilities measured by the instrument for the professional and parent populations. Results suggested that no one group of professionals or parents would be considered to be an "expert" by their restricted variance when making decisions of the prevalence of a majority of component disabilities as they are associated with either the LD or nonLD populations. Tables with statistical data are included as is a copy of the Modified Component Disability Measure. (Author/SB)

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THE HOMOGENEITY OF IDENTIFICATION DECISIONS BY DIFFERENT GROUPS ON LD ADOLESCENTS

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Research Report #9
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The University of Kansas Institute for Research in Learning Disabilities is supported by a contract (#300-77-0494) with the Bureau of Education for the Handicapped, Department of Health, Education, and Welfare, U. S. Office of Education, through Title VI-G of Public Law 91-230. The University of Kansas Institute, a joint research effort involving the Department of Special Education and the Bureau of Child Research, has specified the learning disabled adolescent and young adult as the target population. The major responsibility of the Institute is to develop effective means of identifying learning disabled populations at the secondary level and to construct interventions that will have an effect upon school performance and life adjustment. Many areas of research have been designed to study the problems of LD adolescents and young adults in both school and non-school settings (e.g., employment, juvenile justice, military, etc.)

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Cooperating Agencies

Were it not for the cooperation of many agencies in the public and private sector, the research efforts of The University of Kansas Institute for Research in Learning Disabilities could not be conducted. The Institute has maintained an on-going dialogue with participating school districts and agencies to give focus to the research questions and issues that we address as an Institute. We see this dialogue as a means of reducing the gap between research and practice. This communication also allows us to design procedures that: (a) protect the LD adolescent or young adult, (b) disrupt the on-going program as little as possible, and (c) provide appropriate research data.

The majority of our research to this time has been conducted in public school settings in both Kansas and Missouri. School districts in Kansas which are participating in various studies include: United School District (USD) 384, Blue Valley; USD 500, Kansas City; USD 469, Lansing; USD 497, Lawrence; USD 453, Leavenworth; USD 233, Olathe; USD 305, Salina; USD 450, Shawnee Heights; USD 512, Shawnee Mission, USD 464, Tonganoxie; USD 202, Turner; and USD 501, Topeka. Studies are also being conducted in Center School District and the New School for Human Education, Kansas City, Missouri; the School District of St. Joseph, St. Joseph, Missouri; Delta County, Colorado School District; Montrose County, Colorado School District; Elkhart Community Schools, Elkhart, Indiana; and Beaverton School District, Beaverton, Oregon. Many Child Service Demonstration Centers throughout the country have also contributed to our efforts.

Agencies currently participating in research in the juvenile justice system are the Overland Park, Kansas Youth Diversion Project and the Douglas, Johnson, and Leavenworth County, Kansas Juvenile Courts. Other agencies have participated in out-of-school studies--Achievement Place and Penn House of Lawrence, Kansas, Kansas State Industrial Reformatory, Hutchinson, Kansas; the U.S. Military; and the Job Corps. Numerous employers in the public and private sector have also aided us with studies in employment.

While the agencies mentioned above allowed us to contact individuals and supported our efforts, the cooperation of those individuals--LD adolescents and young adults; parents; professionals in education, the criminal justice system, the business community, and the military--have provided the valuable data for our research. This information will assist us in our research endeavors that have the potential of yielding greatest payoff for interventions with the LD adolescent and young adult.

Abstract

Three related studies were designed to address some key issues confronting the learning disability field concerning the identification of learning disabled adolescents. The first study (Research Report No. 9) addressed the question of which group(s) of professionals or parents make the most homogeneous identification decisions on learning disabilities' criteria. In the second study, (Research Report No. 10) the temporal and interscorer reliability as well as the construct and content validity of the Modified Component Disability Instrument was investigated. The reliability and validity of the Modified Component Disability Checklist and Secondary Test battery were investigated in the third study (Research Report No. 11).

The first study included a statewide random sampling of seven groups of professional educators and a group of parents of LD students. These eight groups were compared for their degree of agreement on the component disability survey instrument. The results indicated that no one group had greater consensus than any other. The conclusion was that LD teachers were an appropriate group from which to obtain likelihood ratios to be used in obtaining posterior probabilities for the LD population.

In the second study the professionals who had responded in study 1 re-estimated the probabilities they had provided 14 days earlier. This provided a measure of temporal reliability of the items. In addition, a new sample was drawn from two (Speech clinicians and LD teachers) of the seven professional groups to cross-validate the initial results. The temporal reliability coefficient obtained for individual items was sufficiently high to suggest the reliability of the judgments. Secondly, no differences were found among 41 component disability estimates between the two independent samples of professionals. As a part of this second study the survey was subjected to a factor analysis. The logical clusters of component disabilities were found to be substantiated as statistical factors.

As a part of Study 3, (Research Report No. 11) a group of seven professionals in LD found the behaviors associated with the component disabilities of the survey generally to be: (a) important, (b) grade appropriate, and (c) accessible to the teachers' observations in the classroom. The conclusion was that the Modified Component Disability Checklist is a reasonably reliable screening measure, especially at grades 8-12. In the third study a group of learning disabled adolescents and a group of low achieving peers were administered both the classroom screening measure and the battery of pre-selected tests. A multi-trait, multi-method analysis was completed. The results show a trend toward the reliable and valid nature of these two screening methods.

THE HOMOGENEITY OF IDENTIFICATION DECISIONS BY DIFFERENT GROUPS ON LD ADOLESCENTS

Perhaps the most pressing need in the learning disability field is that of defining the population. The confusion that has existed in education as a result of poor definitional direction for the LD population is well documented (Wissink, Kass, and Ferrell, 1975; Chalfant and King, 1975; Larsen, 1978). Progress in educational programming, research and intervention development is contingent upon resolution of the definitional issue. A major focus of this Institute is to address those concerns that relate to the identification of the LD adolescent population.

The research outlined here is a series of studies that have been designed to address some of the major questions that are related to identifying characteristics of the population and secondly, reliable, valid identification procedures. While several of the hypotheses and questions in these studies related to previous work done at the University of Kansas using Bayesian aggregate procedures (Alley, Deshler, & Warner 1979); these three studies addressed issues beyond that specific procedure. Included in the research questions of these studies are the following:

1. Do members of a professional group agree on the identifying characteristics of the LD adolescent?
2. Is any one professional group more homogeneous than others, and consequently more consistent in their identification?
3. Are the subjective judgment decisions of child care agents reliable and valid?

4. Can regular classroom teachers reliably observe content valid behaviors in students that are indicative of LD?
5. Is a test battery additionally useful in making an identification of LD?

Methodology

Subjects

The population of this study was a personnel listing obtained from the Kansas Department of Education which included teachers of learning disabled adolescents, regular class teachers, remedial reading teachers, school psychologists, speech clinicians, school principals and school counselors. These persons were employed in the State of Kansas. A random sample of 90 persons from each of these seven professional groups was selected as those from whom probability judgments were sought. The subject sample was those volunteer respondents (see Table 1) who returned the modified component disability instruments.

A group of 30 parents who were members of a State ACLD were contacted to participate in the study. Eleven parents returned probability judgments to the University of Kansas Institute for Research in Learning Disabilities (IRLD) (see Table 1).

Measurement

A modified component disability instrument was constructed based on previous research by Alley, Deshler and Warner (1979). The modified component disability measure contained 20 of the 71 original component disability items. These 20 component disabilities were grouped into four logical clusters. Two clusters had been identified by Alley et al. They were:

Best Differentiating Academic Components (likelihood Ratios $\geq$ 4.0) - 6 components

High Frequency Components (Probability of LD $\geq$ .90) - 4 components

The two additional clusters included: Best Differentiating Component Disabilities among Social Components and Worst Differentiating Component Disabilities. The five Social Component Disabilities included no likelihood ratios less than 3.0. Those social component disabilities that obtained a likelihood ratio greater than 4.00 had not been included in the initial Best Differentiating Component Disabilities because they were not deemed accessible to regular classroom observation and/or were not measurable on a formal standarized test.

The Worst Differentiating Component Disabilities were those five components with the lowest likelihoods among the 71 component disabilities. These components were included to account for attention and mental set factors of the judges.

The measure also contained an estimated percentage, which in the subject's judgment, was to indicate the prevalence of LD among secondary students. This estimated percentage was used as a part of the prior probability statement in applying the Bayesian theorem.

The 20 components and estimated percentage were then randomly ordered into the Modified Component Disability Instrument (Table 2).

Procedure

During January, 1979, the Modified Component Disability Instrument (Modified Instrument) was distributed to 630 professional personnel using bulk mailing. Included with the Modified Instrument were a cover letter explaining the purpose of the study and asking for the person's voluntary participation, instructions to complete the Modified Instrument and a

stamped envelope to return the Modified Instrument to the IRLD. A waiting period of two months was provided for the return of the Modified Instrument. Neither follow-up letters nor phone calls were made to encourage participation.

The investigators made a decision in April, 1979 to include a sub-sample of parents who were members of the Association for Children with Learning Disabilities (ACLD). The Modified Instrument, the cover letter, instructions and stamped envelope were sent to 30 parents of an ACLD group in Missouri. The cover letter and instructions to complete the Modified Instrument were changed slightly so that parents would judge the component disabilities from their perspective as a parent rather than as a teacher.

Research Design

The Bartlett Test of homogenity of variance was applied to each of the 20 component disabilities for each of the two populations, i.e., LD and non-LD analyses were carried out using the BMDP 90 computer program (Dixon, 1975). Among the eight groups the same test was applied to the estimated percent. An .01 level of significance was used to account for inflated Type I error rate due to the number of univariate tests, which equaled 41.

Results

Table 3 shows the results of the analyses which reflect the significant differences between the eight groups. The 18 statistically significant variables were observed to determine the group with the least amount of variance in judging component disabilities of LD and non-LD populations. On seven variables, all of which were associated with the prevalence of the component disability in the non-LD population, the Speech Clinicians were least variable in their responses. The ACLD parents were least variant on six variables, all of which were associated with

non-LD. On three variables, two LD and one non-LD, the LD teachers judgments demonstrated the least amount of variance. Finally, one variable associated with LD adolescents and the estimated percentage of prevalence of LD in the adolescent population, the variance was least for the school psychologist's judgments. These results suggest that no one group of professionals or parents would be considered to be an "expert" by their restricted variance when making decisions of the prevalence of a majority of component disabilities as they are associated with either the LD or non-LD populations.

Discussion

The results of this study did not support the assumption made by Alley et al. that the LD teachers are the care givers of choice when assigning component probabilities to LD and non-LD adolescent populations. Rather, the conclusion could be made that the judgments of any one of the eight groups might be used to assign probabilities.

In an additional analysis, the likelihood ratios of five components (the four Best Differentiating Component Disabilities and the Estimated Prevalence Percentage) were used to calculate the posterior probability. The posterior probability is interpreted as an odds statement of some event occurring. With this instrument, it is the probability of a student being learning disabled given that the student has been judged exhibiting a set of behaviors (e.g., trouble in detecting spelling errors, dificulty with decoding words, difficulty with recognizing words, and difficulty with solving mathematical algorithms). These posterior probabilities were calculated for each of the eight groups. Previously, Alley et al. obtained a posterior probability of .96 using the four likelihood ratios and estimated percentage of a group of secondary LD teachers in the Lawrence, Kansas and Kansas City, Missouri area. In the present study

the school psychologist group yielded a posterior probability of .82; School Counselor group, .86; Regular Classroom Teachers, .88; LD teachers, .89; Remedial Reading Teachers, .90; the School Principals and Speech Clinicans, .95; and the ACLD parents, .97. Only the parents group obtained a posterior probability as high or higher than the orginal Alley et al. group. However, only the school psychologist group deviated greater than $\pm$ .10 from the orginal posterior probability provided by Alley et al.

The narrow range of differences among the groups is explained by two interrelated factors in the Bayes formula. These factors are the prior probability or estimated percentage of LD prevalence in the general adolescent population and the likelihood ratios computed for the component disabilities. For example, a group's higher judgment of prevalance of the population, say 10 percent, and a lower likelihood ratio for a specific component disability as decoding skills, say 3.0, will yield an identical posterior probability of .23 as another group's lower judgment of prevalence of the population, say 5 percent, and a higher likelihood ratio for a specific component disability as decoding skills, say 6.0.

This conclusion has implications for local school district personnel who wish to screen for LD adolescents in junior and senior high schools. The school personnel may use any one of the groups in this study as judges to obtain probabilities for component disabilities. However, these school personnel must be cautioned to also use the estimated percentage judgment of their selected group of judges in the Bayes Formula for computing posterior probabilities.

This study has several limitations. First, the groups sampled were restricted to the State of Kansas. A national study of all the groups or selected groups may be beneficial, although the logistics associated with

a carrying out such a study would be considerable. Second, the size of the groups varied from eleven to forty-three subjects. Larger subsamples of professionals and parents is necessary in a future study. Third, the study must be cross-validated. Finally, the prevalance of the component disabilities in LD and non-LD populations needs to be empirically validated through multiple assessment procedures (e.g., classroom observations, self-report, clinical assessment, and psychometrics).

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TABLE 1

Professional Groups and Parents included in the Subject Pool with number and percentage of pool used a subject for Study #1.

GROUPS	SUBJECT POOL	SUBJECT SAMPLE
Professionals		
LD Teachers	90	49
Regular Class Teachers	90	22
Remedial Reading Teachers	90	25
School Psychologists	90	33
Speech Clinicians	90	13
School Principals	90	27
School Counselors	90	36
Parents	30	11

TABLE 2

Modified Component Disability Measure

by Gordon R. Alley, Donald D. Deshler, and Michael M. Warner

1.	Disability in sequencing, e.g., becomes confused when structure changes, i.e., schedule changes, etc.	LD___% NON-LD___%
2.	Is very concerned that he/she might be mentally retarded, or "dumb".	LD___% NON-LD___%
3.	Is impulsive.	LD___% NON-LD___%
4.	Exhibits low self-esteem, low self-concept.	LD___% NON-LD___%
5.	Disability in recognizing sight words.	LD___% NON-LD___%
6.	Exhibits poor concentration, is easily distracted by noises and other people.	LD___% NON-LD___%
7.	Disability in detecting errors, e.g., spelling errors.	LD___% NON-LD___%
8.	Has poor perception of social impact on others, i.e., is less able to interpret non-verbal social cues.	LD___% NON-LD___%
9.	Disability in use of algorithms, e.g., subtracts from left to right.	LD___% NON-LD___%
10.	Disability in using study skills, e.g., surveying, outlining, notetaking, skimming, question asking, reviewing, etc.	LD___% NON-LD___%
11.	Disability in recognizing correct spelling in multiple choice format or content.	LD___% NON-LD___%
12.	Complains constantly of physical illness.	LD___% NON-LD___%
13.	Disability in test taking skills, e.g., throroughly reading instructions, review entire test before responding.	LD___% NON-LD___%
14.	Has difficulty functioning independently, is overly demanding of teacher time and attention.	LD___% NON-LD___%

15. Disability in the organization and arrangement of written material, i.e., exposition of a topic and differentiating one paragraph from another. LD___% NON-LD___%

16. Has temper tantrums. LD___% NON-LD___%

17. Is resistant to receiving assistance from authority figures. LD___% NON-LD___%

18. Disability in the production of themes of adequate length. LD___% NON-LD___%

19. Disability in decoding words. LD___% NON-LD___%

20. Complains of being bored much of the time. LD___% NON-LD___%

What percentage of the total secondary population do you estimate as being learning disabled?_____%

TABLE 3

Means and Standard Deviations of Professionals and Parents

on 18 Significant items of the Component Disability Instrument

ITEM / GROUP	1 Non-LD		2 Non-LD		4 LD		4 Non-LD		6 Non-LD		8 Non-LD		9 Non-LD		10 Non-LD		12 Non-LD	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
LD Teachers	17.54	11.81	18.69	18.04	76.10	21.29	29.76	14.22	25.94	15.06	18.65	9.54	13.07	13.47	87.45	14.85	10.02	7.53
Regular Class Teachers	23.82	22.12	17.41	17.24	53.18	33.65	35.23	24.90	33.18	22.23	28.36	14.86	9.46	12.89	69.91	28.14	13.09	14.87
Remedial Reading Teachers	24.48	20.76	19.08	13.46	67.58	25.40	31.52	19.61	31.84	21.54	18.80	11.41	9.59	12.58	78.36	22.43	12.92	9.28
School Psychologist	16.55	14.13	20.97	16.10	70.18	15.26	31.21	15.36	24.00	13.77	22.33	15.53	8.50	8.02	69.12	21.77	8.24	5.55
Speech Clinicians	15.00	6.77	11.54	3.15	62.31	19.64	19.62	15.20	20.38	10.30	15.00	6.46	6.73	7.16	58.69	23.55	6.31	6.22
School Principals	17.08	21.32	18.27	20.34	67.54	27.84	24.00	20.41	26.15	19.97	21.73	17.72	11.44	19.63	72.07	23.47	12.23	18.69
Counselors	20.14	14.12	21.94	19.17	65.69	22.49	30.83	15.24	34.71	22.26	29.24	15.72	13.97	16.54	69.44	20.87	15.86	15.45
Parents	21.82	13.09	25.00	15.49	75.91	22.45	30.45	14.05	23.91	15.07	17.27	5.18	10.71	5.35	77.73	11.04	13.64	5.52

TABLE 3 (Cont.)

ITEM / GROUP	13 LD		14 Non-LD		15 Non-LD		16 Non-LD		18 LD		18 Non-LD		19 Non-LD		20 Non-LD		Est Prct	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
LD Teachers	82.49	13.96	20.67	11.63	33.75	17.58	8.96	7.90	83.04	15.54	36.50	16.85	21.38	11.50	34.89	18.15	9.35	8.89
Regular Class Teachers	69.95	23.55	19.52	13.31	27.73	21.25	11.14	9.06	62.73	30.50	37.50	21.86	23.05	19.27	33.62	25.55	21.05	16.35
Remedial Reading Teachers	75.32	21.91	22.32	21.24	26.21	13.92	12.32	17.75	78.70	22.57	34.35	24.22	25.96	20.83	40.60	22.56	17.88	10.85
School Psychologist	60.38	24.09	24.21	18.39	30.48	21.69	11.53	8.11	68.09	24.37	37.16	23.12	24.55	17.42	30.67	22.16	8.59	5.35
Speech Clinicians	60.77	24.31	12.92	6.21	19.23	9.97	11.46	13.13	48.08	18.77	23.46	10.28	19.23	8.13	19.08	9.72	12.08	15.11
School Principals	62.78	25.66	17.12	16.74	24.04	19.95	13.08	13.76	68.44	26.55	24.77	15.05	21.42	16.73	31.96	21.98	13.85	11.09
Counselors	64.83	22.04	23.14	15.00	29.26	13.66	15.14	16.26	64.44	24.15	31.62	14.34	25.59	13.69	38.47	21.54	19.41	16.72
Parents	75.45	16.50	17.27	9.05	27.73	14.21	17.27	10.09	71.50	28.78	28.80	14.02	23.33	12.99	36.82	15.21	20.50	8.64